

SAMUEL HADLEY PUBLIC SERVICES BUILDING LEXINGTON, MASSACHUSETTS



Client Town of Lexington,
Lexington, MA

Completion 2009

Size 80,000 sf of new
construction on a
9.6-acre site



LEED Silver Rating Goal

This new complex is the first municipal project under the town's new sustainable design initiative. The project will house the town's Department of Public Works administration, engineering and operations divisions as well as municipal offices for the Town Facilities group, and will utilize sustainable design principals to maximize daylighting, good indoor air quality and reduced energy costs for the town. The site design features ecological restoration and sustainable stormwater management strategies as well as low maintenance, indigenous plants in the landscape design. These features enhance the adjacent residential neighborhood and local amenities such as the Minuteman Bike Path and North Lexington Brook.



Public Entry - Parking Spaces are Porous Asphalt



Vehicle Staging + Prep Area - Daylighting

GOOD NEIGHBOR

BY CREATING A CONNECTION TO THE BIKE PATH AND PROVIDING A PLACE TO REST AND GET WATER, ALONG WITH PARKING, THE DPW PROVIDES VALUABLE COMMUNITY INFRASTRUCTURE.

STORMWATER MANAGEMENT

UTILIZING BIO-RETENTION AREAS, GREEN ROOFING AND CONSTRUCTED WETLANDS STORMWATER IS COLLECTED, TREATED AND UTILIZED ON-SITE

PROTECTING NATURAL RESOURCES
BY SITING THE BUILDING PROPERLY THE FRONT GREEN CONTINUES TO BE A VALUABLE TOWN RESOURCE. THROUGH PROPER STORMWATER MANAGEMENT AND LANDSCAPING NORTH LEXINGTON BROOK IS ENHANCED.

GOOD NEIGHBOR

BY CONTAINING NOISE AND LIGHT FROM THE FACILITY THROUGH PROPER BUILDING SITING, VEHICLE CIRCULATION AND LANDSCAPING, IMPROVES AS A NEIGHBOR.

UTILIZING SOUTHERN EXPOSURE

BY LOCATING MAINTENANCE DOORS ON THE SOUTHERN SIDE OF THE SITE IT ALLOWS PASSIVE SOLAR HEATING DURING THE WINTER. A CANOPY ABOVE THESE DOORS REDUCES SOLAR GAIN DURING THE SUMMER.



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The holistic approach to the sustainable design for the Samuel Hadley Public Services Building includes many components which were evaluated to determine their community impacts; facility siting and circulation, cost (initial and life cycle), impact on operations and employee safety and effectiveness. This analysis directed the design team toward a sustainable approach that focused on smart design ideals that had a low initial cost with a quick payback. The approach led to higher insulating values in the building envelope, gravity fed rain harvesting, underground storm infiltrators to lessen the burden on the Town's infrastructure, specific heating and ventilation design and natural daylighting to reduce artificial lighting loads.



Conference Room - Natural Daylighting + Natural Ventilation



Rain Harvesting Tanks - 5000 gallon capacity

Information on the Facility

1. Lobby – Based on meetings with Town groups the lobby is also designed to instill a sense of civic pride. The design of the space creates a vertical feel and an open nature. The materials used are very sustainable. The solid surfacing (reception countertop) has recycled content, as does the porcelain tiles and ceiling tiles, the paint is low VOC (volatile organic compound) which means that there is less VOC's in the air when the paint is off-gassing. Essentially due to the low VOC's, the air is healthier for the occupants (public and employees) The wood on the walls and handrails for the stairs is FSC Certified (Forest Stewardship Council) which means that it is sustainably harvested (means that the harvesting is done in and by responsibly managed forests.)
2. The lobby is surrounded by Town employees on both floors. This symbolically represents that the Town employees are there to serve the public. This is also why there is glass in the foremen's office which provides the public a visual connection to the operations area to provide a glimpse of what the DPW & DPF does.
3. Building Envelope (wall and roof construction): The Administration Building has a wall system that has 3 times the insulation value of the State Energy Code. The Operations areas have 2 times insulation required by the Energy Code. The wall was constructed with this insulation value due to the analysis done with the energy model during the design process. We found that not only is the increased insulation a sustainable idea, it has a very quick payback.
4. All the occupied spaces have natural daylighting and natural ventilation. This allows the user to control their own environment and reduces the need for artificial light and less reliance on the mechanical system for heating and cooling – especially during the Spring and Fall.
5. Employee Corridor: This area acts as a transition from the Operations to the Administration Building. Due to the skylight above and the curtainwall at each end, during the day little to no artificial light is required, lessening energy costs. The elements that cross the corridor at ceiling levels contain all the building systems for the Administration Building, including mechanical ductwork, power, data, and sprinklers. The Administration Building does not have any roof top units; the one on the Central Storage roof serves the Administration Building. This was to keep unsightly equipment from the front view from Bedford Street.
6. The Administration Building is two stories to contain the program requirements but is also sited to screen the operations area from Bedford Street.
7. Central Storage is a new way of looking at storing and distributing equipment and supplies. Like a warehouse the central storage area will allow the DPW and DPF to buy in bulk and inventory the supplies and equipment creating a more efficient process.
8. Central Storage has polycarbonate clerestory windows which reduces the need for artificial lighting. This product is not as expensive as glass but has a very good insulating value.
9. The Central Storage area has gravity vents located on the roof which allow air movement throughout the area. This helps cool the area down, especially when used with high volume fans located on the ceiling. These fans move large amounts of air, but due to the low velocity of the unit have small motors using very little electricity.

10. The Town combined the DPW and DPF to create efficiency. The building has many areas which are dual component spaces including: the carpentry workshop, specialized tool storage, central storage, maintenance workshop, small engine repair, wash bay and vehicle staging and prep.
11. The vehicle staging and prep area has polycarbonate clerestory and skylights which reduce the need for artificial lighting. On a sunny day no additional lighting is required. Polycarbonate is not as expensive as glass but has a very good insulating value.
12. The vehicle staging and prep area has gravity vents located on the roof which allow air movement throughout the area. This helps cool the area down, especially when used with high volume fans located on the ceiling. These fans move large amounts of air, but due to the low velocity of the unit have small motors using very little electricity. These elements serve a dual purpose as well reduce the need for the large exhaust fans to purge the space due to a CO event. By moving the air around and out of this area CO from the vehicles does not have a chance to build up, which requires a purging of all the air in the space. This ties into the heating of the space. Radiant heaters were selected so that they could heat objects within the space (vehicles, equipment, walls and the floor slab) so when a CO event happens and the air is purged from the space the area still has heat in the objects which will heat the space quicker and more efficiently. It is important to note that when the air is purged from the space the air that replaces it will be cold air in the winter.
13. The facility can collect 5000 gallons of rain water from the roof to supplement the vehicle wash bay and can be used as non-potable water in street sweepers.
14. The majority of the roof is a highly reflective roofing which reflects the sunlight, helping to reduce the heat island affect. The other part of the roof will be a green roof which will act as part of the storm management system.
15. The storm management system includes underground storm infiltrators, the green roof, biobasins, constructed wetlands and a rain garden. Each of these allows for the storm water to infiltrate into the ground instead of being a burden on the Town's infrastructure. The facility can treat and infiltrate stormwater for the 100 year storm.
16. The facility also welcomes visitors from the Bike Path, especially on the weekend where bikeway users can park at the facility and explore the area on the bike path. When they return, they can use the green area as a picnic area or rest spot which includes a water bubbler for them and their dogs.
17. The front green which use to be the Town nursery has many new trees that are native to this area.
18. The layout of the facility is intended to block noise and light to the Ledgelawn area and tries to contain it along the south side of the building near maintenance.
19. The operations for the sand and salt shed are mainly inside the building, in an attempt to reduce the noise generated during snow events. Vehicles will not have to back up thereby eliminating annoying beeping.